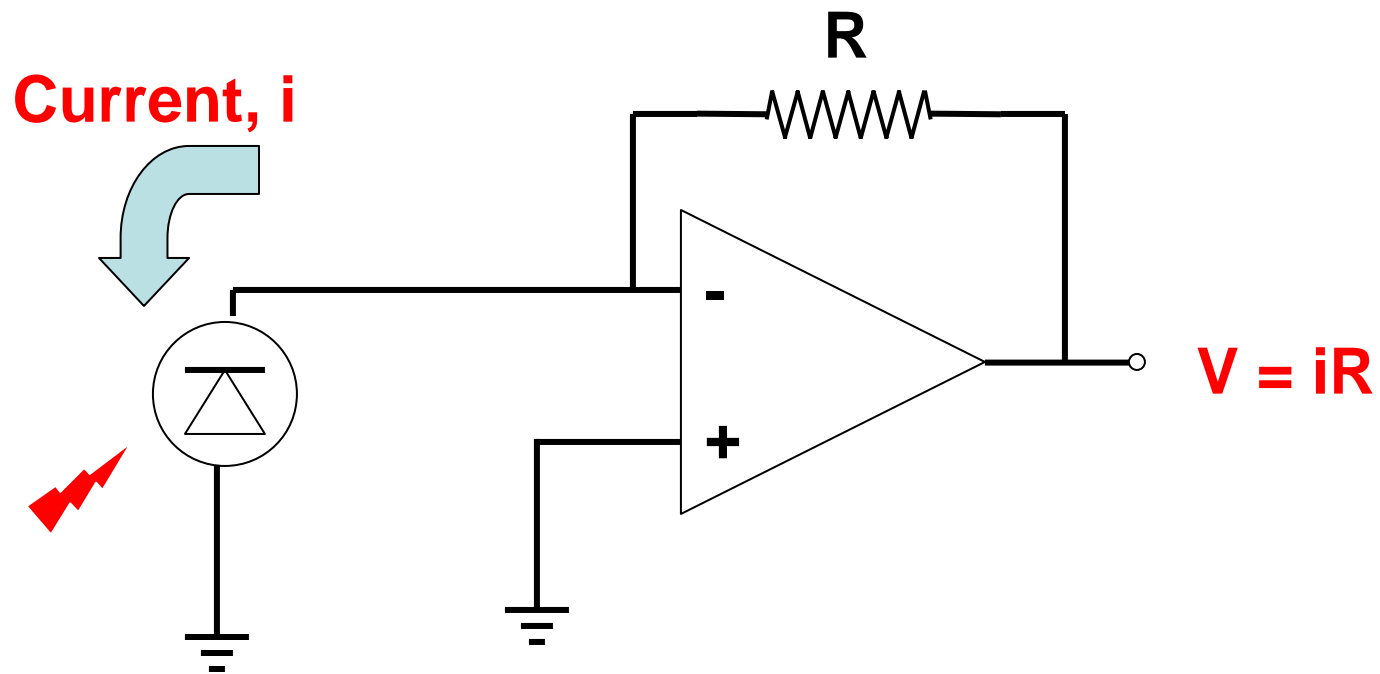


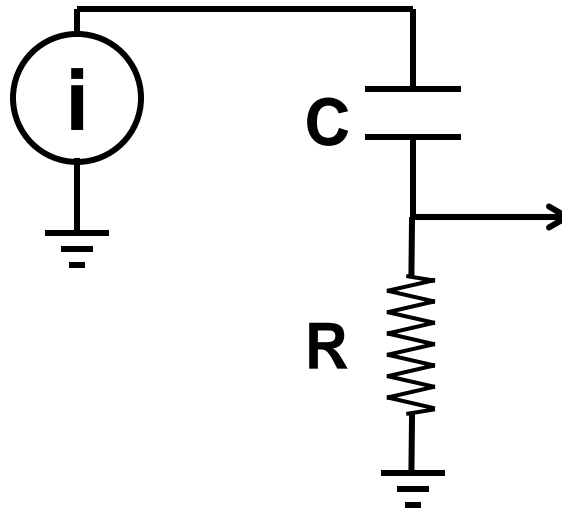
Correction from previous lecture



Do high/low pass circuits filter a current source?

Current Source

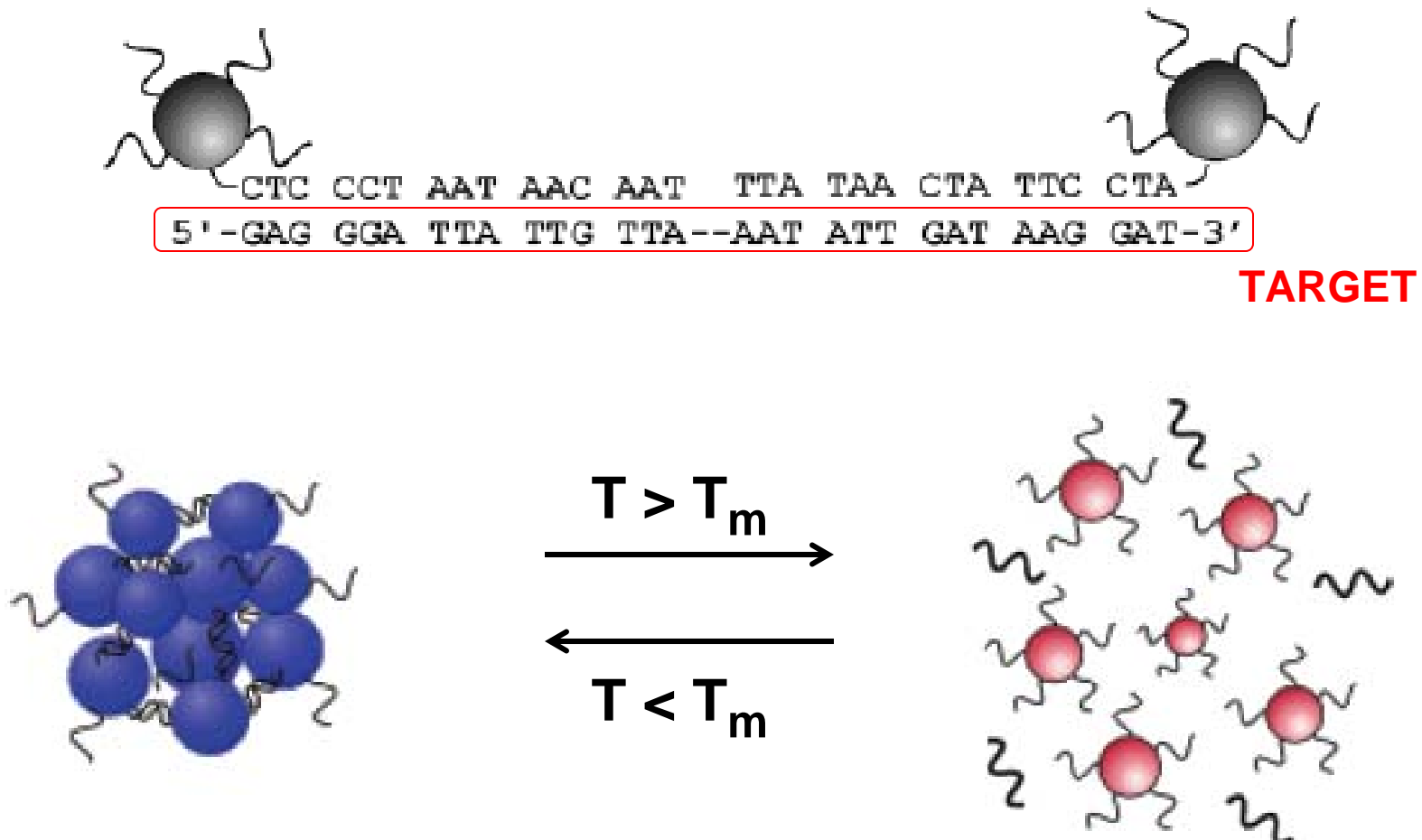
$$i(t) = i_o \cos \omega t$$



$$\begin{aligned} v(t) &= i(t) R \\ &= i_o R \cos \omega t \end{aligned}$$

DNA-linked gold nanoparticle assemblies

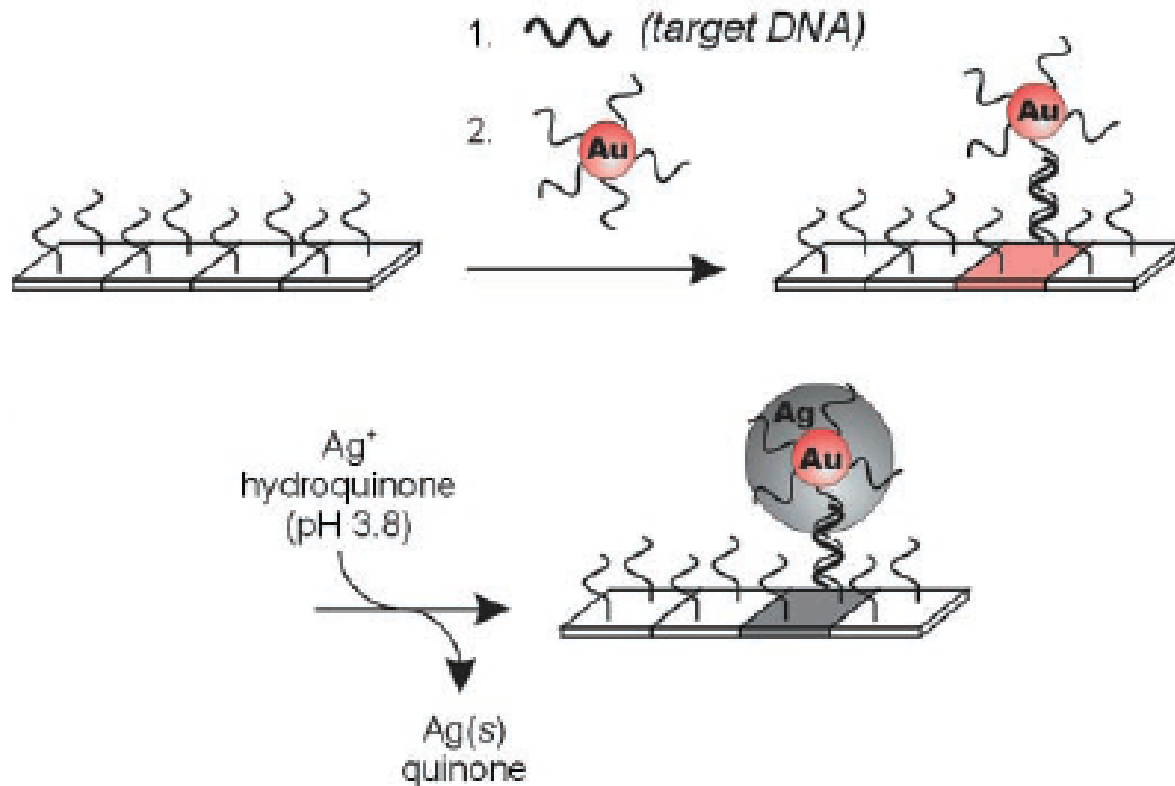
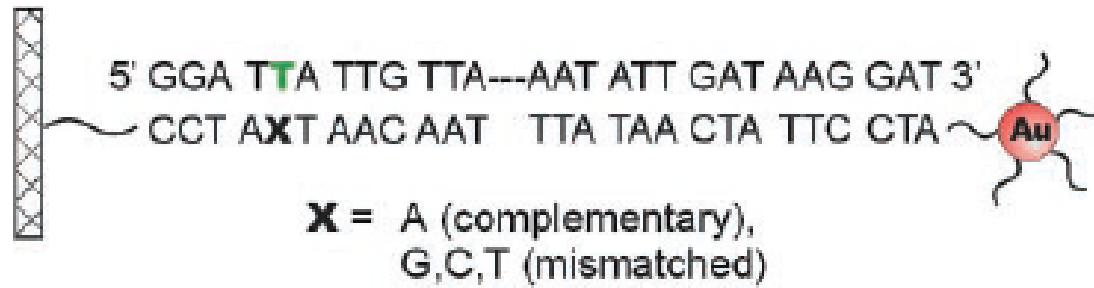
Mirkin Lab, Northwestern University



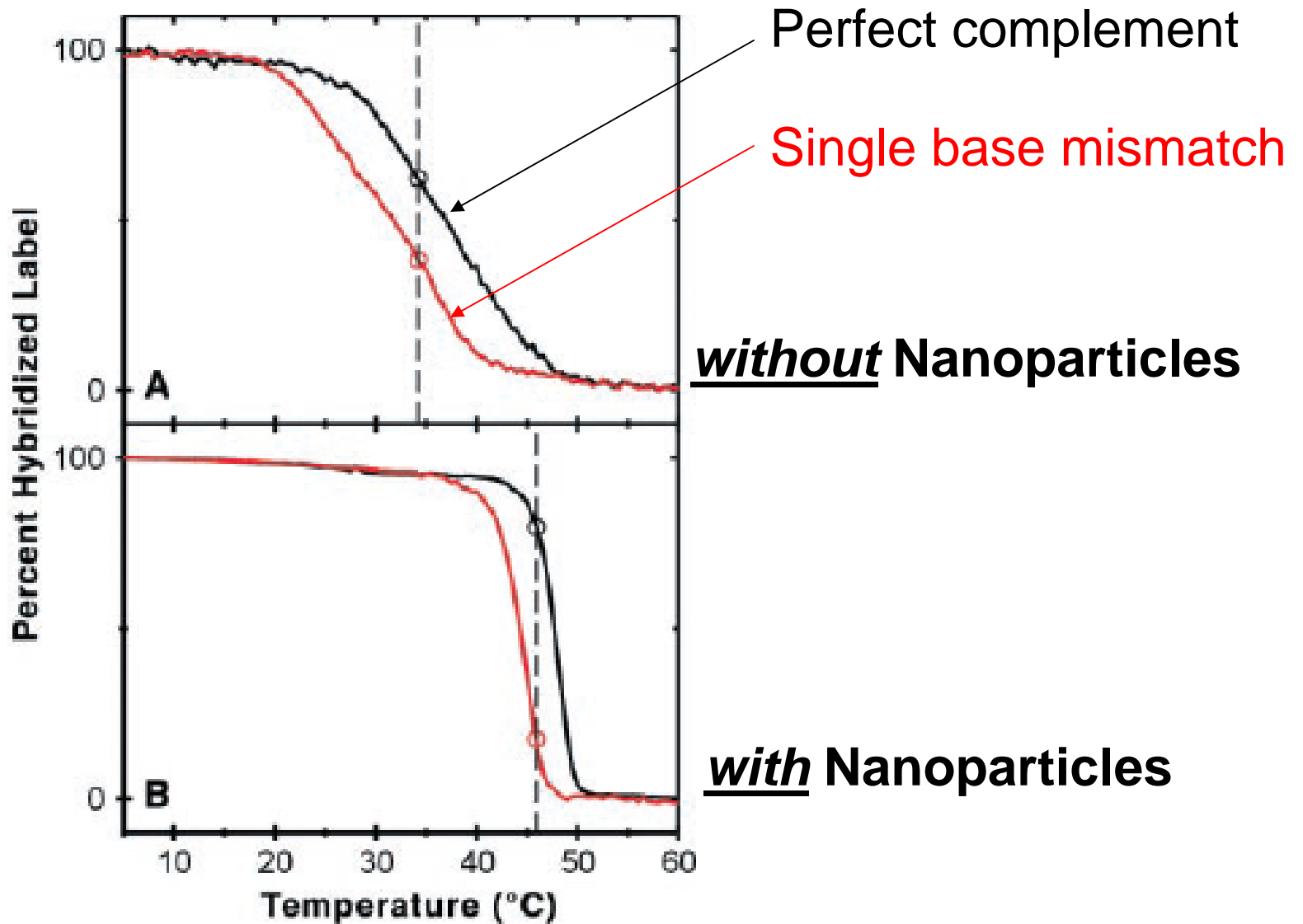
How do nanoparticles influence the DNA melting curve?

DNA Array with Nanoparticle Probes

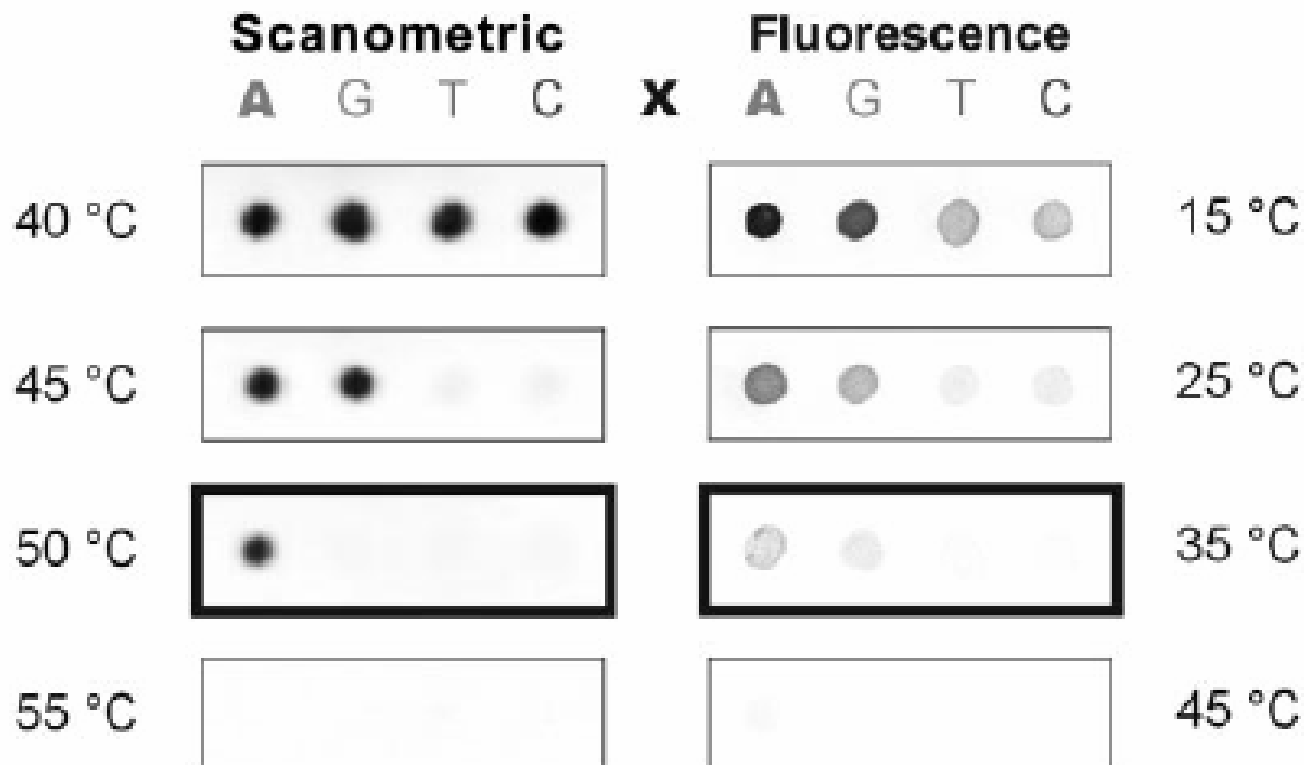
Taton, Mirkin, Letsinger, *Science* **277** (2000)



DNA Melting Curves



Sharper melting curves increase sequence selectivity



20.309 Roadmap

| | |
|---------|--|
| Sept 26 | Fourier Analysis |
| Sept 28 | Noise and the power spectral density |
| Oct 3 | Scanning Probe Microscopy |
| Oct 5 | Convolution Theorem |
| Oct 10 | <i>Holiday</i> |
| Oct 12 | Linear Systems |
| Oct 17 | Ultimate limits of force and position detection |
| Oct 19 | Student presentations on micro cantilevers |
| Oct 24 | Optics with Prof. So |